ELECTRICITY on the FARM

The National Magazine of Rural Electrification

FEBRUARY, 1943

THIS MONTH—

Electric Brooder Care
Plans for Electric Milk Rooms
Small Homemade Grain Elevators
Sell Pasteurized Electrically
One-Can Milk Coolers Pay
Heating Equipment Running
[illegible] Helpers
[illegible] Measure
Heat Governs the Ironing
[illegible] Bathroom
Questions and Answers

Chicago Tribune Syndicate

Editor's Chat

"Clicks"

It is quiet in the house this winter afternoon. I'm alone. Outside there is beautiful white snow and sun and calm. Something in the house clicks and a motor starts. I listen. It is the faint purr of the refrigerator compressor. Soon it stops. The "clicker" in the refrigerator says it is cold enough. Then another motor starts. It drives the oil burner in the heating plant. The thermostat in the living room discovers that it's too cold in the house. But that heating plant is no simple door and damper affair. When the burning oil, ignited by the electric arc, has the firebox heated just right, another thermostat clicks and a motor driven blower starts shooting warmed air into the rooms and taking back the cooled air to be reheated. It's a game of "tag you're it" between that burner and blower—on and off, on and off, until the room thermostat says "enough."

Someone has set the timer on the electric kitchen clock. It clicks, then buzzes. I draw warm water to shave. Click. The regulator on the water heater is replenishing the supply.

I used to buy ice, stoke the furnace, heat the water, watch the clock, and make the best of it. Now I sit and write, and they click.

Industry "clicks."

Farming is "clicking" more each year.

"Grass Roots" Forums

In the early days of our country, and to a degree even at present, the New England town meeting was and is an evidence of self rule in a democracy. The problems of the community and the nation were the concern of all the people. They met, discussed and acted by mutual agreement or majority rule. The people were the government.

The meaning of democracy is sovereignty in the people.

Today, because of the size of our country and the political system which has grown up, government is not so simple and direct. Few of us feel very sovereign. We have the privilege of voting. Some do. Few of us will claim that we vote intelligently. Too many say "What's the use?".

In our present day representative government there is great likelihood of our electing representatives because of their popularity rather than their preparedness. They represent a selfish electorate which too often has little notion of what it really wants in sound government. It just wants to be sure to get its hands as deep into the government grab-bag as any other community or pressure group. To get for us, and to keep themselves in office, our representatives do a hocus-pocus trading of votes and conniving; and the government has become immensely involved, ponderous and costly. We pay the bills. Washington controls our actions, our businesses, our incomes, our lives. If you don't believe it, you have not lost your hired man to a war plant at absurdly high wages, you are not in the automobile, appliance or farm machinery business, you have paid no taxes and have no one in the armed services.

We need a powerful, authoritative central government for war. We must be and are willing to give up businesses, freedoms and incomes to win, as other nations are doing. We should, however, have guts and determination enough to give something to recapture what we are fighting for when this war is over.

We are trying something in our little country community on Long Island. We are holding an occasional community forum or "town meeting." Eight or ten people came to the first sessions—just citizens, not politicians. Our purpose is to study and crystallize in our own minds what we are fighting for and what we want to preserve or improve on. Someday we hope to be informed enough to tell our representatives what we want in government—not what we want in post offices, war industries or bonuses but in good fundamental government looking to the welfare of the whole people. We believe they will welcome it. We are starting at the "grass roots," not with a New York headquarters. There is no patent on the idea. Ten thousand such "grass roots" forums now might go a long way in revitalizing our democracy after the war.

George W. Kable

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Small Home-Made Grain Elevators

SO many readers were interested in the quarter horsepower grain elevator described by Prof. Musselman in our January 1942 issue that we are giving some illustrations of other small elevators the plans for which are available from the University of California.

Three Types Described

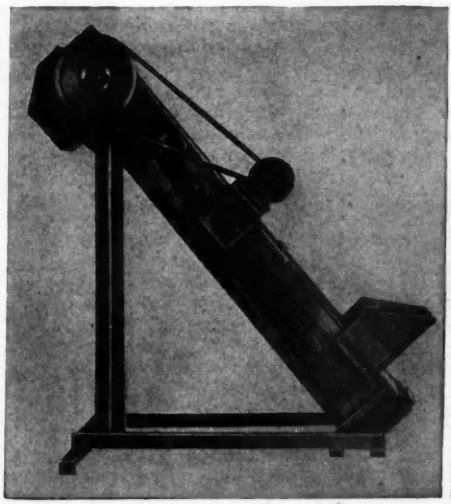
Three types of small elevators are shown. One is similar to the Michigan elevator, using folded canvas with cleats fastened to it as the drag belt. This is a small unit for use with a one horsepower or smaller motor. It is inexpensive, and most of the materials can be obtained easily. The plans are available from The Extension Service, University of California, Berkeley, Cal. Ask for plan C-211. Price 26c.

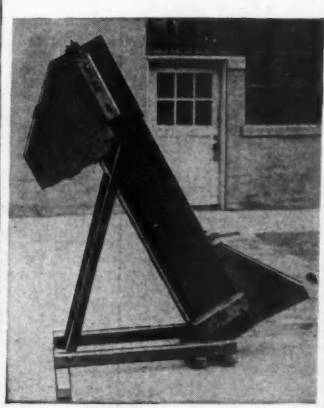
Plans for the other two elevators should be obtained from the Division of Agricultural Engineering, University of California, Davis, Cal. One of these is a portable chain drag elevator. It is much like the one above except that it is built sturdier, using standard chains and sprockets for the conveyor in place of canvas. It can be made in any length desired, but lengths over 32 feet will probably require struts for support. The capacity when inclined 60 degrees is about 10 bushels per minute, and the power recommended is two horsepower. The number of this plan is B-212.

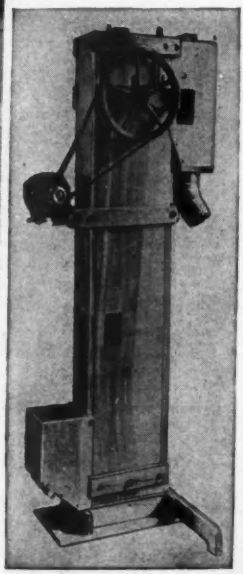
Vertical Bucket Elevator

The third type of portable elevator is a vertical bucket elevator. Buckets are made of galvanized iron and attached to 4 inch, 3 ply cotton belting. Wood rollers are used. There is much less friction in this type elevator than in a drag elevator, so it requires less power. For elevating 10 feet, a ¼ hp motor is recommended; for 11 to 15 ft.—⅓ hp; and for 16 to 20 ft.—½ hp. It has a capacity of 4 bushels per minute or six tons per hour. The plan number is B-207.

All the illustrations show shortened models used for demonstration purposes. The plans give detailed drawings and bills of materials with instructions for building.







Left: Portable Cleat Elevator Plan C-211. It is 6 inches wide, uses wood or steel cleats fastened to a canvas belt and will lift 4 bushels of grain per minute to a height of 15 ft, using a ½ hp motor for power. The elevator may be made in any length up to about 20 ft. It has adjustable wood bearings for tightening the belt. **Center:** "Shorty" model of the portable chain drag elevator, Plan B-212. It uses standard link chain No. 52, No. 55 or No. 62 with 2½" x 6" wood cleats. Length up to 32 ft, with a capacity of 10 bushels per minute, using a 2 hp motor. The drive sprocket turns at 150 rpm. **Right:** Vertical cup elevator, Plan B-207. The cups are of sheet metal, 3½" x 3". This model is 6 ft high. It may be made up to 20 ft. Capacity is 4 bushels per minute with a ¼ to ½ hp motor. Has adjustable hardwood bearings, and pulleys to give a cup speed of approximately 300 ft per minute. The grain feed opening near the bottom is 3" x 11". It has an adjustable feed gate. Openings cut in these models were for inspection of the working parts during operation.

Sheep Shearing Equipment Available

C. G. Randall of the U. S. Department of Agriculture announced in Chicago recently that new shearing machines, handpieces and repair parts will be available in 1943. Wool is needed this year and in addition some 18,000,000 shearling pelts for lining aviators' flying suits.

Now that the way is clear, manufacturers are getting materials into production as fast as possible to have machines ready for the shearing season. No priorities are needed to buy shearing equipment. Buy from your regular dealer. It is your war duty to use your old machine if possible. Order any necessary repair parts at once.

★ WARTIME STRATEGY ON THE FARM ★

In time of ~~peace~~ *war*, prepare for ~~war!~~ *Victory!*

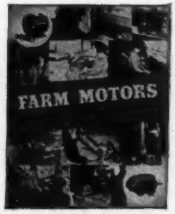
EVERY AMERICAN FARMER is fighting a private war of his own. He's working as he never worked before . . . to out-produce Nazi and Jap farmers and the slave farmers in Axis-occupied countries.

And now's the time . . . when other farm work has slacked off . . . to get your fighting equipment into perfect trim for the food-production battle ahead.

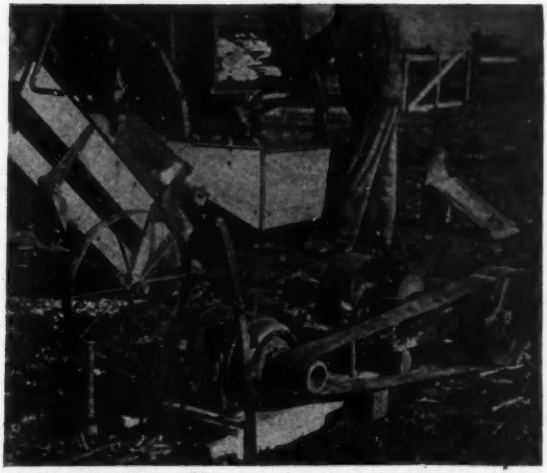
First, check over all your farm equipment. Repair or replace worn and broken parts. Sharpen and adjust cutting blades. Clean and lubricate all bearings.

By all means, make your electric motor portable! Then you can move it from job to job . . . grinding feed, shelling corn, operating farm shop equipment, and accomplishing many other farm tasks.

Also, begin construction of equipment that will provide production *shortcuts*, to replace the farm help you have lost. For example: A corn elevator or a power hay-hoist will save valuable time in storing feed this season. They save much labor, too . . . and are easy to build.

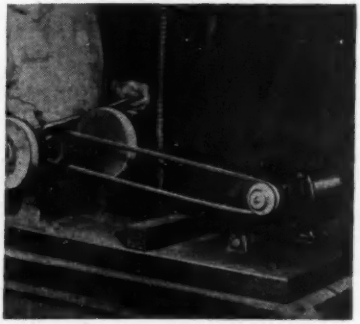


For information and plans, consult your local utility company . . . or send for Westinghouse Farm Bulletins and the "Farm Motors" book. They're *free!*



CORN ELEVATOR . . . *Plan now for storing your corn next Fall. Build a corn elevator, powered by a portable motor. It will handle your corn crop in a hurry . . . saving you many hours of back-straining toil!*

TOOL GRINDER . . . *There's no better way to increase food production than to keep your cutter blades sharp on a power-driven grinder. You can attach a* portable electric motor *to your grinder in a jiffy!*



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☐ Clothing ☐ Crops ☐ Dairy Cattle ☐ Sheep ☐ Home Improvement
☐ Swine ☐ Rural Electrification ☐ Handicraft ☐ Truck Gardening

Name.....

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ELECTRIC BROODER CARE

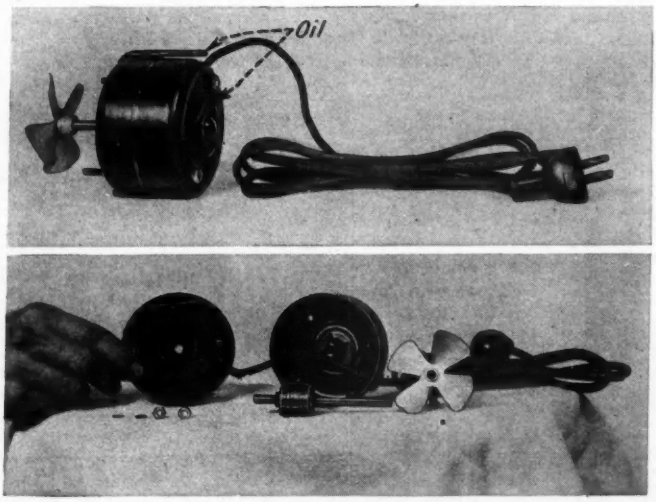
A Little Care When Starting and Using Brooders and When Storing at the End of the Brooding Season Will Prolong Usefulness Many Years. Instructions in Care of Hovers, Thermostats, Wafers, Wiring, Heaters, Fan Motors, Curtains and Insulation, and in Use of Thermometers

By J. B. STERE

POULTRYMEN, who have used electric brooders the past five to seven years with consistently satisfactory results, have learned that the secret in obtaining long, useful life lies in the occasional attention that is given by the operator. The three critical periods when attention is most effective and easiest are—(1) while the brooder is in use, (2) at the time it is being stored, and (3) in advance of the time of planned re-use.

When the Brooder Is in Use

Proper attention, given at the time the brooder is being used, will pay greatest dividends and simplify care. For example, by keeping the hover free of droppings eliminates the task of cleaning the hover if droppings have been allowed to accumulate. This precaution also prolongs the life of the hover. Flat hovers may be covered with several layers of paper or two to four inches of litter to protect the brooder. The birds are permitted to use the top of the brooder for additional floor space and, as the droppings collect, the top layer of paper is removed or the litter is changed to facilitate cleaning. Sloped hovers are usually designed to prevent birds from roosting on the brooder. The incline of some, however, is only sufficient to cause birds to slide off when the hover is perfectly clean. Such hovers should be waxed and polished. The birds will keep the hover clean as they slide off.



Above: The fan and motor from an electric hover. Pull the plug and without removing the motor, place 2 to 4 drops of good, light motor oil (SAE10 or sewing machine oil) in each oil hole at weekly intervals when motor is in use. Clean the fan blades and outside of motor with a dry cloth after each oiling. Be sure the fan starts freely when it is reconnected to the electric circuit. **Below:** Dismantle, clean and reassemble the fan and motor before storing the brooder. Lay each part in the order it is removed. Thoroughly clean the inside and outside of the motor with a dry cloth. Wipe a film of oil on the motor shaft. Repair any frayed wire insulation. In reassembling motor, tighten the bolts uniformly so that the motor shaft does not bind and will turn freely. Test the motor by running it before storing it away in a dustproof bag.

The extension cord of a brooder should be kept free of litter and so supported that chicks will not use it for a roost. In many cases, the extension cord provides the initial means for birds to soil the hover. Supporting the cord in a vertical position will prevent such trouble.

Adjusting the brooder curtain to keep it out of the litter will prolong its life. Loose ends or ravels that the chick may peck should be securely fastened and cut off short.

An adequately-insulated brooder provides maximum protection against heat loss. In some cases, chicks have destroyed large sections of insulation by pecking. When chicks start pecking insulation, it is an indication that a change in management may be needed. Perhaps the brooder is crowded or the temperature under the brooder may not be high enough to drive the birds out to feed during the daytime or, possibly, the light intensity under the brooder is too high. A red attraction light will usually correct the latter condition. Aluminum paint or a tar compound is usually applied to insulating material to repel chick pecking.

The heating element is the heart of an electric brooder. It should be kept free of dust and other foreign matter by brushing lightly with a dry, soft brush about once each week. Avoid rough handling or jarring of the element and never immerse it in water.

If it is desired to discontinue the use of an attraction or pilot light, replace these bulbs with a burned-out bulb. Open bulb receptacles collect dust and create a potential fire hazard. Dust and moisture may also form an acid that will destroy the receptacle.

The fan unit of a forced air-ventilated electric brooder should be given the attention recommended in the accompanying illustration.

Storing the Brooder

At the end of a brooding period, the brooder should be thoroughly cleaned, disinfected and dried. Remove the wafer and store it in a cool, dry place, such as a basement. High storage temperatures can destroy the effectiveness of a wafer. If possible, set the brooder in sunlight, exposing all parts to direct sun-rays for a period of several hours. Sunlight not only will dry moisture accumulation but helps to sterilize as well. If conditions do not permit sunlight exposure, keep the brooder in a dry, warm room for several hours. Detach the curtain after it is thoroughly dry. The thermometer should also be removed. Place these extra parts in a paper bag or similar wrapping and attach to the brooder. For recommended attention before storing a fan unit, see illustration. Make a written note of any damaged parts that cannot be repaired so that new parts may be ordered.

A dry room free of excess dust and where electric service is available is a desirable storage space for the brooder. Either hoist the brooder to the ceiling or fasten it to the wall to conserve space and avoid damage.

Before Re-using

The brooder should be inspected and tested four to five weeks before the chicks arrive. Order new parts that may be needed as early as possible. It may be necessary for your dealer to secure the parts from the manufacturer.

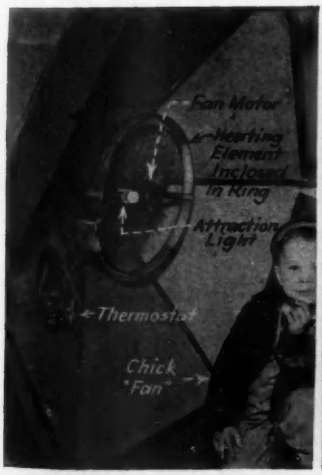
J. E. Emsley, West Alexander, Pa., has his brooders properly counterweighted so that they are easy to raise and lower for inspection and cleaning. The cord is vertical so chicks cannot roost on it and leave droppings on the hover. Mr. Emsley has used electric brooders since 1936.

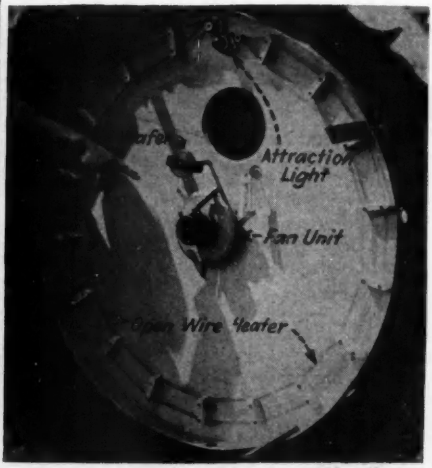
Electrical Connections. Before connecting the brooder to the electric circuit, inspect the electrical connections for mechanical and electrical security. It is not necessary to untape connections unless there are some indications of trouble. For instructions on the repair of extension cords, refer to page 13 of the November 1942 issue of this magazine. Test attraction and pilot-light bulbs in another receptacle so that it will not be necessary to connect the brooder to the circuit as yet.

Thermostat. The thermostat is the "brains" of an electric brooder. It is connected in the electrical circuit in the same manner as is an ordinary switch. The thermostat is adjusted to shut off the flow of electric current when the desired temperature is attained and to turn it on again when the temperature drops. The two general types of thermostats used in electric brooders are—(1) snap-action and (2) slow-action. Either type may be operated by a gas or liquid-filled metal wafer that expands when the temperature rises and contracts when the temperature falls, or by a bi-metallic strip that bends with changes of temperature.

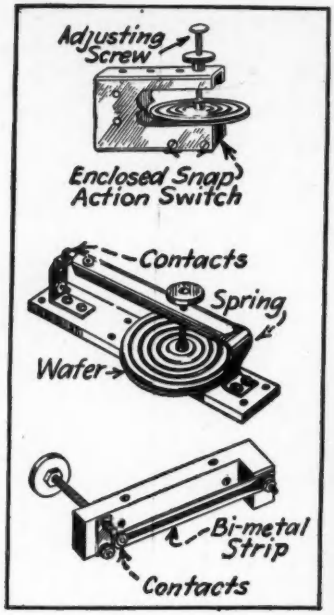
The contact points of a snap-action type are usually enclosed in an insulated box and are not open to inspection. The mechanism can be tested by applying and releasing slight pressure to the stem that protrudes from the box. The action of the switch snapping on under pressure and off when released can be heard.

The contact points of a slow-action thermostat should be inspected for pits or burns. These

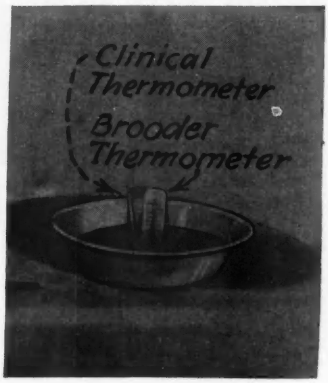




Left: This brooder has an enclosed heating element. The heating wires are inside of the metal ring. A fan is used for forced circulation of the warmed air. Right: Underside of brooder with open wire heating element and fan circulation of air.



Different types of thermostats shown at left. Top: A simple wafer thermostat with snap-action, quick make and break switch. Middle: Wafer thermostat with slow make and break switch. Wafer pushes contacts apart; spring closes them. **Bottom:** Bi-metal thermostat with contact at end of bi-metal strip. A change in the temperature bends the strip to open or close the contacts. **Below:** Checking the brooder thermometer. Put it in a pan of warm water with a good clinical thermometer. If they do not read the same, adjust the brooder thermometer or allow for the difference in reading.



can be removed by polishing with a small carborundum stone or file. This type of thermostat is usually equipped with a small condenser to reduce arcing and prevent radio interference.

When the brooder is not in use, the thermostat wafer should be removed and stored in a cool, dry place, such as the basement. To test the wafer, hold it between the thumb and forefinger and immerse in a pan of cool water, then in a pan of warm water. If the wafer is in good operating condition, the expansion and contraction can be felt. Some poultrymen buy new wafers each year, but this is unnecessary if the wafer is properly stored when not in use. Wafers will perform satisfactorily for long periods, if properly stored.

Heating Element. The two common types of elements used in brooders are—(1) open wire and (2) enclosed or sheathed type. In the open type, the resistance wire is exposed to the air while in the enclosed type this wire is in an insulated metal sheath.

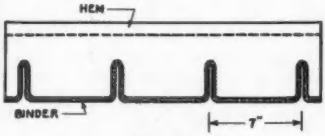
Open Wire. Avoid kinking or nicking of the wire as such will create hot spots and thereby shorten the life. Inspect electrical terminals for tightness and cleanliness. If a terminal is found to be loose and, as a result, an inch or so of the resistance wire has been burned, remove this section of wire and make a new connection. Be sure all parts of the new connections are free of oxides and dirt. Do not remove long sections of the wire as this will increase the wattage used, and the heat output and also shorten the life of the element.

Enclosed or Sheathed Type. Avoid rough handling or bending. Check tightness of electrical terminals. Be careful not to twist terminals as such may rupture the element wire inside the sheath. This condition can seldom be repaired.

After the wafer and pilot light have been replaced, the brooder can be connected to the electric circuit. Adjust the thermostat so the pilot light is on.

Thermometer. The principal use of the thermometer is for making initial adjustment of the thermostat. When chicks are placed under the brooder, the thermostat is adjusted to provide maximum chick comfort, usually between 90° and 95° F. An inaccurate thermometer may be responsible for "getting off to a bad start." Brooder thermometer accuracy can be checked with the aid of a reliable thermometer, such as clinical thermometer, by immersing both in the same pan of lukewarm water for one minute and comparing resultant readings. Avoid jarring the brooder thermometer; to do so may separate the liquid column in the tube, thereby making it an inaccurate instrument.

Brooder Curtain. Brooder curtains are usually made of canvas. The supply of this material is now limited. If a curtain should be irreparably damaged and proper materials are not available from which to make a new one, a feed sack is a fairly satisfactory substitute. The accompanying drawing will serve as a guide for making a curtain. The height of a curtain varies with different makes of brooders and, obviously, the length is determined by the size of brooder. They should come to within 1 or 1½ inches of the floor.



BROODER CURTAIN

Testing the Brooder. After the parts of the brooder have been inspected and the necessary repairs made, place the brooder on a a floor free from drafts and connect to the electric circuit. Regulate the thermostat so the pilot-light turns off when a temperature reading of 95° F. is attained. Leave the brooder in operation for at least a day for a good test.

A pilot plant for processing common cattail down into "Typha," a new light weight, water resistant insulating material for filling life jackets, mattresses, pillows, etc., is installed in Ashippun, Wisc. It offers a possible market for cattails which grow profusely in swampland.

★ ***Buy War Bonds*** ★

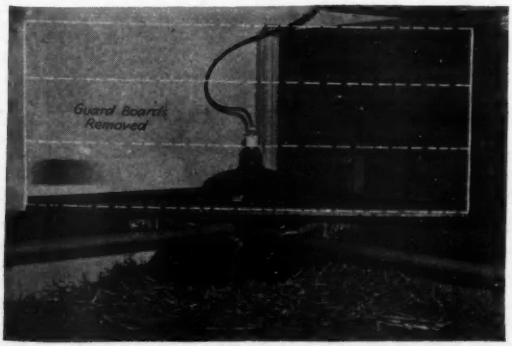
Electric Pig Brooders Produce 30.5 Per Cent. More Pork Per Litter in Indiana

Summary of Results of Studies at Purdue Experiment Station

By SEIGEL A. ANDERSON

1. Supplemental heat as provided by electric heaters proved to be a practical means of reducing death losses of early spring pigs farrowed in individual houses. (Brooders were operated for ten days during and following farrowing.—Ed.)
2. An average of one and one-half more pigs were saved per litter when electric heaters were used. This amounted to 30.5 per cent more pork on the way at weaning time.
3. Death losses of early spring pigs were reduced from 34.3 per cent to 16.9 per cent by the use of the electric heaters in comparative tests with 105 sows which farrowed an average of 8.5 pigs per litter. In both lots, 58 per cent of the death loss during the ten days following farrowing occurred in the first 24 hours and 93 per cent in the first three days.
4. The use of supplemental heat reduced death losses from chilling more than death losses from other causes. The death loss of pigs from chilling was 10.0 per cent in the lot without heat and 2.2 per cent in the lot with heat.
5. The death losses in the houses without supplemental heat were progressively greater as the outdoor temperature at farrowing time decreased. Outdoor temperatures had little if any effect on death losses when electric heaters were used.
6. Supplemental heat had little effect on the rate of gain. The lot receiving heat gained slightly more during the brooding period and slightly less from then to weaning. However, the sows in the lot with heat were suckling 40 per cent more pigs than those in the lot without heat.
7. The electric pig brooder proved to be the most practical method of supplying heat in the farrowing pens of young pigs. The pig brooder provides a small covered area in the corner of the farrowing pen which can be heated economically. The overhead heater which provides heat to the entire pen may be used advantageously during extremely cold weather for drying pigs and the bedding during farrowing.
8. The reflector type flood lamp, which was simply suspended over a protected area in the corner of the pen, proved to be a very satisfactory substitute for the pig brooder unit. The need for aluminum reflectors, which are not available at present due to war emergency, is eliminated by using the flood lamp with a reflector built into the bulb. (R-40 Mazda—150 W. or 300 W.—Ed.)

9. The cost of supplying electric heat varies with the wire needed, the length of time the heat is used, and the number of litters farrowed in each house. This cost should be $2.00 or less per litter.



How to Plan an Electrically Equipped Milk Room

When Business Calls for a New or Larger Milk Room, Plan It for Labor Saving, to Meet Health Requirements and To Be Convenient. Planning Will Also Save Money.

By J. H. BODWELL

"MY milk-room is too small—I built it when my business was only half what it is now—I would like a new milk-room, large enough, with room for expansion; and it must be labor—and step-saving. How shall I do it?

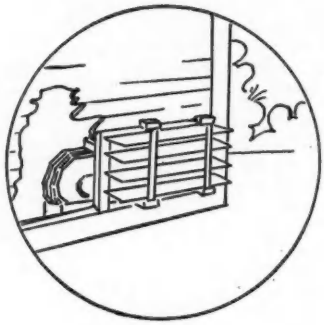
"Growing pains"—how many dairymen have had them? Retail milk dealers who built their milk-rooms in corners of small sheds or similar locations have found that as their output of milk increased, the milk-room was the "bottleneck" of their business.

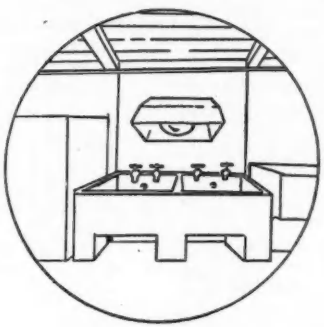
If you must build or rebuild a milk-room, do it right! The suggestions given below are the results of consulting with (and helping, we hope) scores of retail dealers and dairymen faced with this problem.

Don't rebuild your milk-room till you have considered the following "cardinal principles":

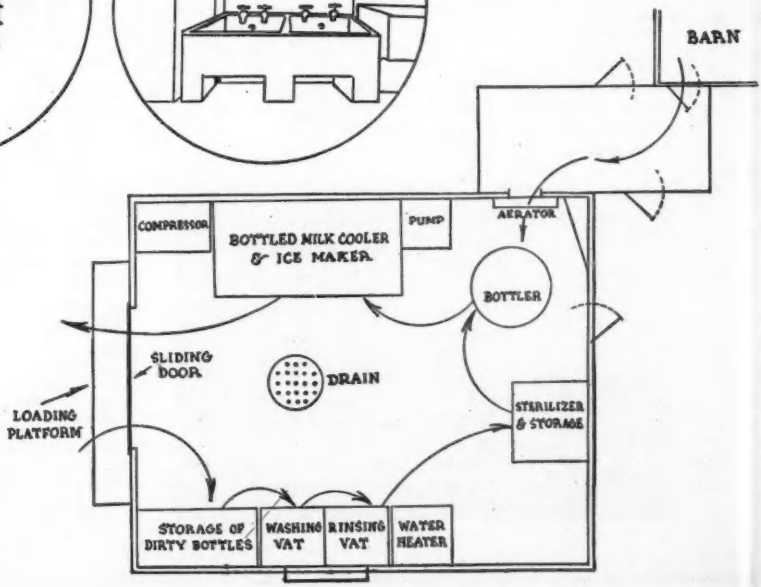
1st. Build *big enough.*
2nd. Build correctly from the sanitary standpoint and to meet Board of Health regulations.
3rd. Locate the milk-room so as to be convenient to the dairy.
4th. Build for economy of materials, of course, to get as much as possible for the money invested; but be sure and build for labor-saving (economy of time), which is more important these days.
5th. Plan your milk-room around clean, sanitary, money-saving, electrically-operated equipment.
6th. Design the building so that the equipment may be arranged for best efficiency.

In starting to make plans, the first thing is to know the *maximum* number of quarts of milk to be handled daily. Next, decide on the equipment necessary for handling this number of quarts. Get the exact sizes of all pieces of equipment, and figure the floor space needed to place the equipment so as to operate the dairy efficiently. The shape of the floor is then determined. Checking up with the lay of the ground, one can then determine the length and width of the room. If the delivery truck is to be housed in the same building, the length and width of this garage should be determined. After the floor plan is made, the drainage from the dairy room is the next thing to plan. Then the layout for the wiring of the building should be made, and the layout of the windows in relation to the placement of equipment. Provision should be made for the placement of the refrigeration condensing units so they will have plenty of air for efficient operation and will not



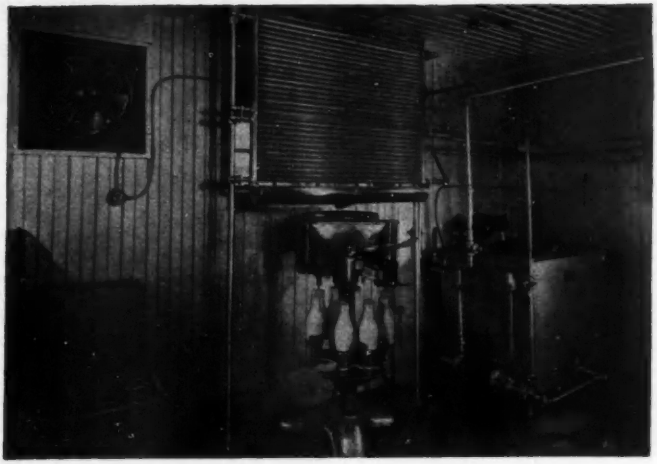


Above, left: Refrigerator compressor housing with outside vent. **Above, right:** Exhaust fan over washing vat.



Right: Floor plan showing travel paths of bottles through the milk room and milk from the barn through the aerator and cooler and out over the loading platform. No cross travel and no wasted steps.

Right: This is the milk room on the Abbott Farm in New Hampshire. It handles about 450 quarts of milk per day from 25 registered Guernseys. From left to right are the exhaust fan, the large aerator and surface cooler, a bottler and a pasteurizer with milk pump.



Above: The 8' x 8' x 7' walk-in refrigerator for holding milk. The unit cooler is shown at the top. It uses a ¾ hp compressor unit for cooling. This dairy also uses a 6-can wet storage cooler and has a 300 gallon brine tank with a ¾ hp compressor for the tank and aerator. The cost of equipment and building for the Abbott dairy was around $4,000.

heat up the dairy room. Then, the lighting plan should be made out.

Our experience has shown that retail milk dealers fall into three definite classifications:

1. Those producing up to 150 quarts of milk daily. They use a minimum of equipment.
2. Those producing 150-300 quarts daily, using a different type of milk room and equipment.
3. Those producing 300 quarts or over require different buildings because of the different equipment put in.

In general, those who produce up to 150 quarts will need only a "beverage" cooler, or a dry storage refrigerator with aerator for cooling. For washing and scalding the dairy utensils the smallest dairies can use an Electro-pail for heating water; larger dairies will need a ten to forty gallon water heater, either open or pressure type.

Those producing 150-300 quarts should be equipped with a "dry box" refrigerator of the type that has a brine tank which is used for cooling over an aerator, and space for storing the bottled milk in cases in the box. They should have an electric storage water heater of from 40 to 66-gallon size (depending on the electric water-heating rate and the usage) to get the necessary hot water for washing bottles and dairy appliances. They should also have an electric sterilizer for sterilizing and storing the bottles in cases after washing.

Producers of 300 quarts and over should have a walk-in refrigerator with brine tank. They should have a 100 gallon electric water heater or a steam boiler for heating water. At the present time, electric pasteurizers for this size dairy are not being manufactured. Hence, the steam boiler method is the only one available until the end of the war.

Sanitary installations and methods must meet the Federal Board as well as the State Health Board regulations. Different inspectors have different ideas and it is well to check with yours so as to be sure every requirement is met. Specific regulations are: The dairy room must have a cement floor; it must be properly ventilated; it must be correctly equipped with drains; it must not be within a certain number of feet from the barn. If plans are made with the thought in mind that these regulations must be followed, there will be no comeback later.

The correct location of the building in relation to the dairy barn is very essential. It should be as near to the barn as possible and still follow the regulations of the Board of Health. It should also be placed to enable the delivery truck to back up conveniently to the loading platform. The height of the platform for delivery should be the same as the floor of the truck.

Plan the building to take advantage of the topography of the land, and perhaps you will save yourself some money. For example, if the land has a slope, the milk room could be put on the higher ground with the garage or the loading platform below to save unnecessary expense.

Be sure and lay out the room so that the different operations may be performed with a minimum of steps. Take a little extra time before you build to figure out how best to do your work, and you won't regret it later.

In arranging the equipment, have the loading platform to receive the dirty bottles on one side and for the bottled milk on the other side. The wash sink should be on the side of the building selected for receiving the dirty bottles, the other side should have the refrigeration and pasteurization equipment.

SHOP AND GARAGE HELPERS

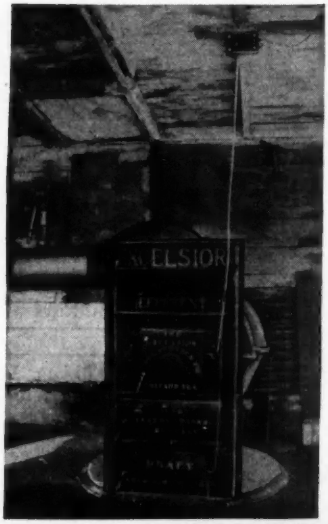
Esserman Farm Has Warm Shop for Winter Repairs and Electric Helpers to Speed Operations

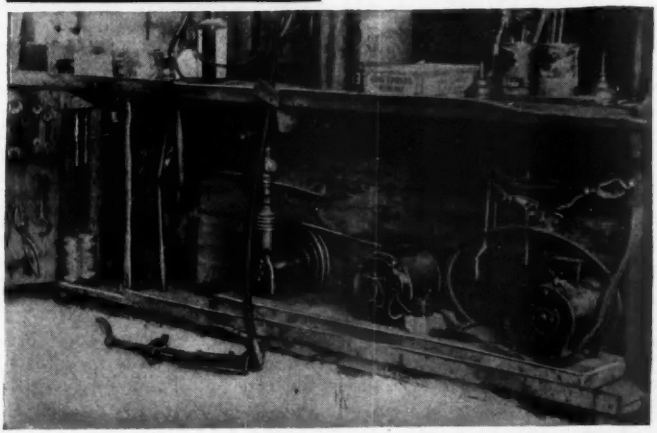
By **GEORGE R. HARRISON**

THROUGH the use of electricity Ed Esserman & Sons, farming their own farm near Chesterton, Indiana, make everything fine and fit for their tractors, family car, and motor trucks, one of the latter being mounted with a portable feed mill that does custom work for many neighbors.

Batteries are charged, there is always air for quick inflation of tires, and there is heat in the garage so that, no matter how cold the weather outside is, tractor, car or truck jump into action at the pressure of the starter pedals.

"Heat in the garage and workshop is a big help," said Mr. Esserman, Sr. The garage had to be tightly built. Over the regular siding the Essermans laid two thicknesses of roofing paper. Doors are tightly fitted. There is little escape of heat. A common stove could have been installed, but they found a furnace, without jacket, that had been in a hardware store unsold for twenty years. It cost them thirty dollars. They burn soft coal. Very little firing is necessary; once in the morning and again in the evening. The thermostat is set for 60 degrees. Tractors in this warmth over night give no trouble in starting. The arrangement saves time, trouble, and temper.





Left: This old furnace without a jacket, purchased for $30, supplied heat for the garage and shop. It burns soft coal and is controlled by an electrically operated thermostat which holds the temperature at 60°. Below: This shelf along the wall holds tire and truck tools, a compressor for inflating tires, a one-quarter hp motor which drives the compressor, and a battery charging generator salvaged from an old automobile. The air hose is counterweighted from the ceiling so it can be pulled out for use on cars and tractors.

"When the weather's too cold for outside work, we grind tractor valves and otherwise refit the tractors and machines for the coming season," explained Ed, Jr.

In an adjoining building he has assembled a battery recharging and tire inflation outfit. On one side of a one-quarter horsepower motor is an air compressor which he bought new. On the other side is a generator salvaged from an old automobile. If a battery needs recharging, the motor is belted to the generator. For tire inflation the motor is belted to the compressor. This compressor has a safety valve that pops off at seventy-five pounds, the amount of air used in some truck tires. The air hose is automatically drawn up out of the way, by a weight attached through a pulley in the top of the building. The weight permits taking the hose a good many feet, even outside of the building.

"Two of the boys are in the army. Help is short. Only Ed, Jr., and myself remain for the farm work," Mr. Esserman said. "Another boy runs the portable feed mill. I don't know what we'd do without the electrical helpers."

The Essermans keep a herd of thirty Holstein milk cows. They're milked with an electric milker.

Coaled Your Cuttings?

Coal is commonly thought of primarily as food for the mouths of factory furnaces, rather than as a material of great benefit to farmers—beyond keeping their houses warm, perhaps. But farmers are beneficiaries of the mining and coal-processing industries in a number of ways. Ammonia compounds, byproducts of the coke industry, have become one of the principal sources of fertilizing nitrogen. Naphthalene, a byproduct of coal carbonization, is widely used to combat several kinds of insect pests, as well as in preserving stored hides. Synthetic plant hormones, also originating from coal, hasten the formation of roots on cuttings and are sprayed on orchard trees to prevent premature dropping of fruit. Other coal products are used as food colorings, wood preservatives, disinfectants and parasite killers.

Science Digest

Soil Now Pasteurized by Continuous Electric Process

Plant Diseases, Fungi and Weed Seeds Destroyed by Passing Soil Through Electrically Heated Four-Inch Pipe. Uses 5 Kw to Treat 5 Cu Ft of Soil per Hour. Temperatures Controlled Between 140° and 212°

By J. R. TAVERNETTI*

THE pasteurizing of soil to control disease organisms, insects and weeds has become a common practice where flowers and vegetables are grown in greenhouses, hotbeds flats and pots. A number of batch type electric soil pasteurizers or sterilizers have been in use for some time. The Agricultural Engineering Division of the University of California has now built a continuous machine in which the soil is heated as it is carried by a screw conveyor from a hopper through a heated pipe.

Construction

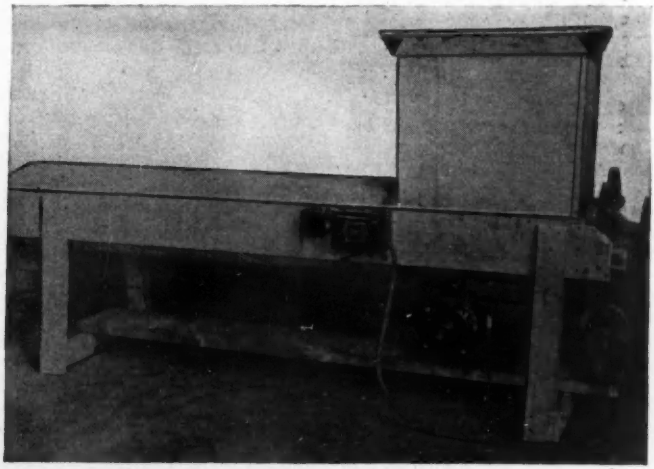
The hopper, which has a volume of approximately 5 cubic feet, is made with vertical sides and is equipped with two agitators, each of which covers half of the width and the entire length to prevent bridging of the soil. The agitators rotate in opposite directions and toward the conveyor on the bottom. They are driven by spur gears with a 3-inch gear on the conveyor shaft in mesh with a 9-inch gear on one agitator which in turn is in mesh with a 7-inch gear on the other agitator, causing them to run at different speeds.

The heater consists of a 6-foot length of standard 4-inch iron pipe around which are wound two 2,500-watt flexible metal-sheathed heating elements. The elements are approximately one-third inch in diameter and 19 feet long, and are wound spirally with about 2 inches between turns. In order to obtain better heat distribution, there is a sheet metal casing over the heating elements and the spaces between turns are filled with metal filings. The entire heater is insulated with 4 to 6 inches of mineral wool.

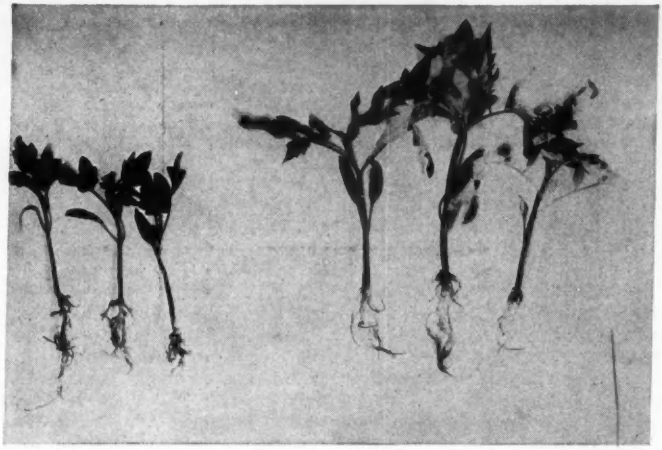
The screw is a standard 4-inch diameter, 8 feet long conveyor which extends through the entire length of the pipe and a semi-circular trough in the bottom of the hopper. It is supported by hardwood bearings on each end and is driven by means of a chain and sprocket from a speed reducer which in turn is driven through a V-belt by a one-third horsepower motor. Both the speed reducer and motor are equipped with cone pulleys so that the speed of the conveyor may be easily changed. The base of the motor has both side and lengthwise adjustments which makes possible the use of any two sheaves. This is important because, due to the low speed of the conveyor a change of one revolution per minute in its speed may mean a change of 10 to 15 per cent in the quantity of soil handled.

The thermostat, which is connected in series with the heating units and has its sensitive element against the pipe, is provided mainly for protection against damage to the equipment from excessive temperatures. It is not a necessity for the operation of the machine, but is recommended as a safety precaution in case the heat is left on when soil is not being conveyed through the pipe.

*Mr. Tavernetti is rural electrification specialist in the Agricultural Engineering Division, Univ. of California, Davis, Cal.



Above: The completed continuous soil pasteurizer. Motor under the hopper drives the agitator and feed screw through a speed reducer. Soil is placed in the hopper at the right and comes out hot at the left end. **Left:** A section of the heater, showing the end of the heating element wrapped spirally around the 4 inch pipe and with metal fittings to distribute the heat. The pipe is well insulated with mineral wool.



Six weeks old tomato plants grown in nematode infested soil. Plants on the left were grown in non-pasteurized soil, while those on the right were grown in soil that had been heated in the continuous pasteurizer to 140°.

If a thermostat with a range of 400° to 600° F. is provided, it may also be used to some extent in controlling the temperature of the soil.

The pilot light is provided for convenience in determining when the heaters are operating.

Test Results

The average rate of pasteurizing was approximately 5 cubic feet of loose soil per hour, or one cubic foot per 1000 watts of heating capacity.

The moisture content of the soil was an important factor in the proper operation of the machine. The most satisfactory combination of mechanical operation and pasteurizing was obtained when the soil was moist enough not to be dusty, but still dry enough so that it would crumble readily after being squeezed in the hand.

Damping off (pythium) and rhizoctonia were controlled when the soil was heated to 150° F. or above, while nematods were controlled at 130° to 140° F. or above.

Good results were obtained with soft weed seeds, but hard-shelled seeds such as morning glory and burr clover were not affected even at temperatures as high as 200° F. In these tests, however, the soil was discharged from the machine directly into flats and no attempt was made to hold it at a high temperature.

General Observations

The soil went through the heater in approximately two minutes, but it could be held at a high temperature for several hours if placed in a covered wood container.

A maximum soil temperature of 212° F. could be obtained with moist soil. The loss of moisture by the soil was negligible in the heater, but there was a loss of 1 to 3 per cent, depending on the moisture content and temperature when discharged into an open container.

A certain amount of soil mixing could be accomplished through the action of the agitators and the conveyor when the soils were placed in the hopper in layers.

The electric energy consumption averaged about one kilowatt hour per cubic foot of soil. The initial cost of the materials in the machine was between $100 and $125, and the total construction cost including labor is estimated at about $200.

The favorable characteristics of the device were the uniform heating of the soil, the large capacity for the connected load, the high thermal efficiency, the ease of handling soil in small quantities, the adaptability to any quantity of soil, the speed of heating, the good physical condition of the soil after pasteurizing, and the possibility of using it to some extent as a soil mixer.

The unfavorable characteristics were the difficulty of construction, the moving parts to wear, the necessity for screening the soil under certain conditions, the adjustment necessary for soil type and condition, and necessity for some attention while operating.

O Say Can You See?

By ED. W. MITCHELL

From a WGY Radio Broadcast

That may sound like the start of The Star Spangled Banner or something, but rest easy: what is on my mind is not so much your patriotism, or your eyesight as your shins.

You may not believe this, but it is a fact and may hold the germ of an idea for you. We decided in the wintertime that a light on a tall pole in the middle of the barnyard would make it easier to do chores and attend to emergencies at night and prevent minor accidents and bruised shins. By June we had gotten all steamed up to the point of assembling the necessary fixtures and materials. The following January I held the extension ladder so it would not slip on the ice while the other fellow finally installed the yard light in the face of a coming blizzard.

Whenever I think of how long it took us to get from the initial intention to the final installation of that light, it dampens my criticism of the government for being so slow about some of the really big projects they undertake.

You can still get light bulbs, and I think inexpensive, weatherproof outdoor fixtures are still to be had, and any one who has put a light up on a pole or against the side of the barn where it lights up the whole yard, will testify it is well worth any trouble or expense to which you may be put. In fact, if it prevented one minor accident, it will probably repay its cost right then and there.

There are some accidents more serious and lasting than kicking a plow or a polecat in the dark, but with electric lighting as easy to get and as cheap to use as it is, there is no need of taking any chances in the dark at all.

The One-Can Milk Cooler Pays With a 2 to 6 Cow Herd

A Record of Some Laboratory and Farm Studies of One-Can Coolers; Rate of Cooling; Effect of Agitation; Cooling Costs

By **GEORGE E. ZERFOSS**[1]

A SURVEY made prior to 1940 revealed the fact that[2] "85 percent of our American farmers keep less than 10 cows," and that[3] "approximately 50 percent of the dairy farmers produce less than two cans of milk per day."

Through a cooperative agreement between the TVA and Virgian Polytechnic Institute, a research project was set up in July 1941 to study the operation of the one-can cooler and to determine if it could be used economically by the small dairy farmer in the State of Virginia.

Description of Cooler

The three units tested were identical in design and capacity. Each cooler was made to accommodate one 10-gallon can of milk or two 5-gallon cans at one cooling. Maximum cooling capacity was 20 gallons of milk per day. The complete cooler consisted of a wet type, self-contained insulated cabinet, 36″ x 23″ x 30″ high (outside dimensions) with the condensing unit mounted outside on the deck of the cabinet. The evaporating coil, of the "drop in" type, was an integral part of the condensing unit. When a 10-gallon can of milk was immersed in the tank the water level rose to 20½″ or one inch above the level of milk in the can.

Insulation

The unit was insulated on sides, end, and top with 3″ of semi-rigid fiberglas and on the bottom with 3″ of temlok, a rigid material similar to corkboard.

Results of Laboratory and Field Tests

The following observations were made after 12 months of actual testing in the laboratory and on small dairy farms:

1. The units are adequately designed to cool two 10-gallon cans of milk per day from 99°F to 50°F and below.

2. The coolers operated an average of 12 hours per day in cooling 20 gallons of milk through a temperature range of 50°F and consumed 1.70 kw-hrs per 10 gallons of milk thus cooled, with an average air temperature of 75°F.

3. Without agitation of the water bath the temperature of milk in the top of a 10-gallon can was 10 degrees higher than in the bottom of the can, after the first hour of cooling. When agitation was employed, this temperature difference was reduced to 2°F after the same length of cooling.

4. Agitation of the water bath reduced the time required to cool 10 gallons of milk 40° from one hour and forty minutes to one hour.

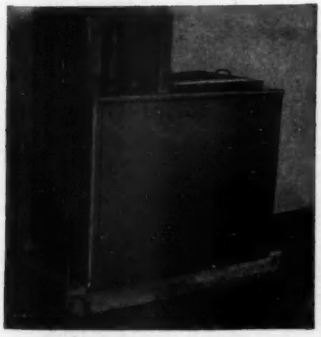
5. None of the units required any labor or repairs during six months of daily operation.

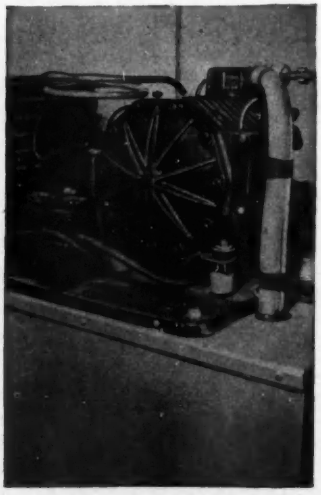
6. One farmer cooled 17,700 pounds of milk (from September 13 to January 15) with a total power consumption of 193 kw-hrs, or 1.09 kw-hrs per 100 pounds of milk cooled. The average milk house temperature was 66°F for that operating period.

7. Another farmer cooled 18,446 pounds of milk (from June 9 to November 1) with a total power consumption of 324 kw-hrs or 1.75 kw-hrs per 100 pounds of milk cooled. The average milk house temperature was 70°F. Maximum power consumption was 2.65 kw-hrs per 100 pounds in August and minimum power consumption was 0.94 kw-hrs per 100 pounds in October. During this period none of this farmer's milk was rejected and the top price was received for every milk period. The farmer's reactions to the use of the cooler, in his own words, are: "The saving of milk is more than sufficient to offset the operation costs of the cooler and probably a large part of the first cost as well."

8. A survey of some 4,000 farms in the State of Virginia revealed that 65 percent of the farms kept from 6 to 10 cows. Over 90 percent of these farmers used well or spring water to cool their milk. An actual survey on 400 of these farms showed the average spring water temperature to be 57°F. (This survey was made from June through September.)

In August 1940 a large milk





Right: A close-up view of the sealed condensing unit. **Above:** One of the one-can coolers tested. The condensing unit is under the hood on top of the cabinet. The cooling coil extending down into the tank is an integral part of the condensing unit.

[1]Mr. Zerfoss is an Agricultural Engineer with the Tennessee Valley Authority, Knoxville, Tenn.

[2]"Rural America Lights Up," by Harry Slattery.

[3]"One-Can Electric Milk Coolers," by John E. Nicholas, *Agricultural Engineering*, July 1941 (Vol. 22, No. 7).

The average spring water temperature from June to September was 57°F. This may "feel" very cold in hot weather. It would feel warm in January. One needs a good thermometer to tell whether water is cold enough to cool the ardor of a bacterium.

company in Virginia rejected more than 50,000 pounds of milk due to high acidity and bacterial count. Milk that tests more than 0.2 of one per cent in acidity is rejected.

9. In the light of laboratory results and test demonstrations made on farms, it was concluded that the one-can cooler can be economically used by the small dairy farmer, not only in Virginia, but in other states as well.

One disadvantage of the one-can cooler is that it provides little room for expansion in seasonal milk production. During the summer months a ten cow, fair quality herd will produce on the average about 200 to 250 pounds of milk per day. This means that such a farmer cannot cool all his milk in the one-can cooler as its maximum capacity is 172 pounds per day. However, there are a great many farms with 2 to 6 cows, and the cooler has ample capacity for such a herd.

We Saved Service on Our Equipment

Farm Folks Tell How They Cared for Equipment, Made Repairs, Saved Gas, Tires and Some Money, and Kept Their Appliances Doing War Work. Prize Winning Letters in November War-Time Contest.

Dad Checks 'Em on Rainy Days

(Winner of $25 War Bond)

• On rainy days Dad's job is to check electrical equipment, such as the refrigerator, (clean, oil and check all through), washing machine, iron, all units we have. Electric sweeper also—brush and belt. Some minor job is found each time. These checkings insure long use of our equipment and save most service calls. Bulbs, fuses, electricians tape is on hand, where replacements, or cord breaks are found. We are rural residents and each minor repair or care we give saves 20 miles, meaning less gasoline used, and no rubber taken off our tires.

MRS. O. BERG,
R. 1, Malta, Ill.

My "Book on a Hook"

(Winner of $5 in War Stamps)

• My ideas may not be original, but they are test-proved and they have for years saved me much time, temper and expense. Hanging conveniently on a hook in my kitchen is my imitation leather, looseleaf notebook. Whenever I buy a new piece of electrical or mechanical equipment, I carefully look over all the illustrated folders, pamphlets, etc., which usually come with it or which may be had for the asking. These picture construction, show the places to oil and also give expert suggestions on care—the kind of care which helps forestall repairs. I paste these helpful pages in my scrapbook so as to have them all in one place, thus making it easier to locate, easier to handle, and less easy to lose or destroy. On the reverse side of the page I enter the purchase date, its price and later, the date on which I first applied oil. Believing thoroughly in the "ounce of prevention" idea, I try to examine every piece of equipment at regular intervals. Here, my notebook acts as a reminder. I have found that modern equipment is so well made, that with this simple care and the easy repairs made possible by the helpful suggestions of the maker, it will give dependable daily service and run until it is worn out and actually requires replacement.

(MISS) L. M. PHANEUF,
Concord, N. H.

Welded Latch; Saved New One

Five—$3 Winners

• Our refrigerator latch broke. I took it off and took it into town on regular trip (Saving $2 service call). Had them weld it instead of buying a new one (Saving precious metal). For two weeks of hot weather used a screw driver to hold refrigerator door closed (Saving $10.50 worth of food for family and hired combiners). On next regular trip to town (15 miles) got back the latch, put it on myself (Saving another $2 Service call). Company complimented me on saving their tires, gas and truck at least $5 and repair man $4. (Total $23.50 cash saved).

BEN KOMNICK,
Chatham, Ill.

Inflated a Water-Logged Tank

• Not so long ago our water pump started to give us some trouble. It is a piston type with 15 gallon tank. The pump started to lose pressure so that it would kick on every little bit when in use instead of at regular intervals.

After studying a while, I decided that the air was gone from the pressure tank and there was nothing to push the water through the pipes to the faucets. I removed the priming cap and opened a faucet and let the pump run until all of the water was out of the pipes and the tank. All the time it was sucking air into the tank through the primer chamber. With the pump still running I replaced the cap and let the motor run until the water came out the faucet again. Sure enough it had sucked enough air into the tank to push the water through. It has been working now for several months without causing any trouble at all.

EDWARD M. VEST,
R.R. 7, Decatur, Ill.

Electric Repair Cupboard

• While making hay last Summer a large wooden pulley was broken. I sawed the larger piece so as to leave a half circle. This I fastened, with the grooved edge up, at the end of a cupboard and it makes an excellent holder for extension cords, which by the way, are of different colors so one may know at a glance which is wanted.

All electric equipment used about the house is kept in this cupboard and on the top shelf is a box in which is kept extra fuses, ends for extension cords, etc., also a good supply of tape. All members of our family know where this material is and how to make minor repairs in equipment. This has saved several trips to town; also much time.

ALICE S. DAWSON,
R.R. 3, Box 203,
Plymouth, Ind.

Mark Oiling Dates on Equipment

• I think one of the most important things to do to help along in this war, (whether it is an electrical appliance or otherwise) is to keep any booklet or information sent along with the article. The factory usually sends helpful "Do's" and "Don'ts" to keep an article running efficiently and smoothly. Our refrigerator calls for a bit of oil in two cups every six months. Keeping the motor as free of dust as is possible also helps to prolong its use. The day I do this job, I write the date on the back of the refrigerator with pencil, which can be easily wiped off with a damp cloth, when the next cleaning date is to be put down, or, six months ahead on the calendar I write, "Clean and oil refrigerator." When you come to that month of the calendar you can't help but notice it's time to clean and oil the refrigerator again. When thick ice is allowed to collect on the coils your machine will run much more often than if defrosted at the right time.

Another cheap and very good investment I made was a cover for my mixer. It keeps the bowls and machine free of dust and so must also keep dust from falling into the oil hole, which has no cap and is at the top of my machine.

All my cooking and baking I do on an electric stove and by reading the booklets through carefully and some experimenting of my own, I find it the fastest, cleanest and cheapest way of preparing meals.

ELLA W. APPELBERG,
R. 1, St. Anne, Ill.

Saved Pump Service Call

• I was about to call a repair man when your November issue of ELECTRICITY ON THE FARM came along.

Your article on page 24, entitled, "Pump Starts Every Time Water is Drawn" not only prevented me from calling an electric service man and thus saving him what would have been an unnecessary trip but probably saved me the cost of a service call as well.

I noticed that the glass gauge on the pressure tank was full of water, so I knew then that the tank was water-logged. I turned off the power switch, shut off the valve to hold the water in the feeder pipes, and then drained out the pressure tank completely by opening a valve near the bottom of the tank and a plug at the top to equalize the air pressure.

After the tank was empty, I again closed the drain valve, replaced the top plug and started the pump by throwing in the power switch. The water coming into the tank compressed the air leaving an air cushion equal to about one-third of the tank capacity. Now my pressure switch throws in only a few times during the day instead of each time I draw water, and what a saving it will be in electric power as well!

C. L. KUTIL,
Antioch, Illinois

While there is no nourishment in *water*, it is vital for at least five reasons: lubricating human joints, diluting blood and lymph to promote circulation, regulation of body temperature through evaporation, and assisting in digestion and excretion.

Electrical Housekeeping

Edited by **GAIL MEREDITH**

A Roaster in the House?

Dinner for Six
Cranberry Meat Loaf
Baked Potatoes
Vegetable Salad
Cottage Pudding

TO make this new meat loaf for a roaster meal, you combine one-half pound of chopped pork and half a pound of chopped beef with one cup of cranberry sauce, three cups of bread crumbs, one egg, slightly beaten, and such seasonings as you like. Grease one of the oblong pans of the electric roaster and pack the loaf into it.

Set the temperature control of the roaster at 350 degrees and turn the switch. When the light on the dial goes out, put scrubbed and greased potatoes in one end of the roaster, the meat loaf in

the middle, and a simple pudding in one of the smaller pans.

Dinner will bake in an hour while you are setting the table, making the salad, and catching up on your mending.

If you do have one of these roasters at your house, you're one of the lucky ones, for I don't suppose there are many of them for sale in any locality nowadays. You're so lucky that I hope you are making extra sure that your roaster doesn't sit around gathering dust, but keeps on the job day after day.

In case you use it so much for roasting that you have half forgotten its other skills, let me remind you to look through your roaster recipe book and notice all of the cooking a roaster can do.

Roaster a Second Oven

It is a second oven. Just smaller, that's all. It will roast or bake or steam food. That is understood. An extra oven is a great help when you are cooking for a crowd. It will cook the meat and the oven of your range can take care of the pies, scalloped potatoes, or last minute pans of biscuits.

In addition, it can be used as a sterilizer for glasses and jars at canning time. It can be set at a low steady heat for making jams and conserves. It will process the jars of fruit as you would process them in the oven.

If you have a broiler grid, you can broil or fry or toast in the top of your roaster. French toast and bacon for supper. Broiled hamburgers with a sprinkling of onion over the top, and eggs fried sunny side up for one of those meals without meat we're planning these days.

Perhaps you bake more loaves of bread at once than your roaster holds. Then use your regular oven, of course. Plan to use your roaster wisely by all means, but don't overlook any of the help it can give you in these busy days.

One of the most widely advertised advantages of the roaster is its portability. You can plug it in anywhere. So you can. So you can. Almost.

You can plug it into any convenience outlet with a 15 amp. fuse. It does not need any special wiring, but it shouldn't have a toaster, an iron or any appliance with a heating element

plugged into that circuit at the same time. The two may make too heavy a load for the single circuit.

That means that the cords for the body of the roaster and for the broiler may have to be plugged into outlets on separate circuits if you use them both at the same time.

And in your enthusiasm for that portability which lets you do your baking anywhere within cord's length of a convenience outlet, don't try to make it do its work another cord's length removed from the base by slipping in an extension cord, and do not try to plug it into a drop cord hanging from the ceiling. The wires of such cords are probably not suitable for the heavy demand a roaster makes; they would slow the preheating and lengthen the cooking time.

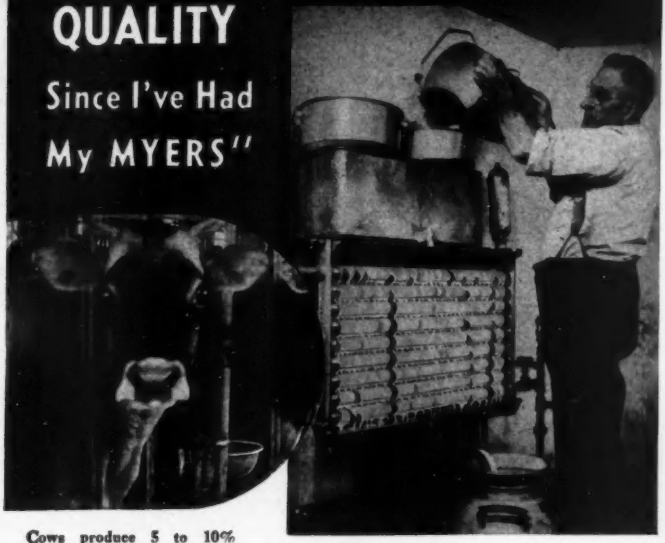
Most good cooks work out their own ways of using the roaster. Many of them have found that when you want a roast to brown well, it is wise to take the meat out of the refrigerator some time before you put it in the roaster. Starting the meat with the roaster hot rather than cold, produces a better roast.

To get a crusty brown on a roast, you can heat the roaster to 450 degrees or 500 degrees, and brown the meat in a pan with a little fat in it. Leave the roaster at this temperature until the meat is as brown as you want, then lower the temperature to 350 degrees for roasting. Another way to get a good brown on the roast is to use the broiler over the roast for a few minutes.

Taking care of the roaster is a simple matter of keeping it clean. Just be careful not to get the electrical connections wet when you are cleaning the outside of the roaster with a damp cloth. The pans and racks come out so they can be washed like any dishes. Soak spots that won't wash off instead of scraping them. Be sure to wipe off any spill-overs from the exterior at once so they can't bake on.

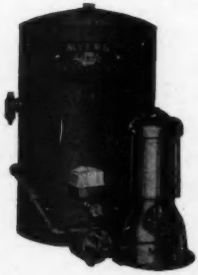
With that little attention your roaster can save you time for that extra production effort or community work or whatever patriotic contribution you are making.

"I GET MORE MILK of BETTER QUALITY Since I've Had My MYERS"



Cows produce 5 to 10% more milk when clean, fresh water is constantly available.

A Michigan Myers owner of a 23-cow herd says: "My Myers helps maintain a high rate of milk production. It keeps the automatic drinking cups in my cow barn supplied with water, furnishes cold water under pressure for my milk cooler, and we have hot water in the milk house for cleaning purposes. In 5 years my Myers has needed no repairs except replacement of plunger leathers cut by sand in the water." Like thousands of other farmers, this owner appreciates the extra value and long life that always go with a famous Myers Water System.



NEW FREE MANUAL—If you now own a water system (regardless of its make), mail coupon for this FREE BOOK. Tells how to make minor repairs and adjustments on any make of pumping equipment. For repair parts and expert servicing, see your Myers dealer.

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Heat Governs the Ironing

It's Not the Weight of the Iron or the Push That Makes for Good Ironing. It's the Temperature. Some Pointers on Keeping the Iron Good for the Duration.

THERE isn't much point in weighing our likes and dislikes in electric irons when nobody has much chance of buying any iron at all, but there is some value, it seems to me, in considering how the iron we have does its job. If you have been thinking that the quality of your ironing depends on the weight of the iron and the strength of the push you put into driving that iron across a sheet, just listen to what the *Consumer's Guide* has to say about it. *Consumer's Guide* is a publication of the Department of Agriculture.

"You don't need a heavy iron to do a good job. Light irons work just as well on the laundry and much better on the laundress. A good ironing job depends largely upon maintaining the right ironing temperatures, and upon the proper amount of moisture in the fabrics which require dampening."

Perhaps you can save yourself some effort if you will watch the way you go at your own ironing.

Whichever you have, a heavy iron or a light one, it needs good care to keep it ready for work. One of the first rules is—don't overheat the iron. If yours has no thermostatic control, it is altogether too easy to overheat it by turning it on while you sort out the ironing, or leaving it on when you go to answer the telephone.

Overheating Injures an Iron

If it does have a thermostat, you wouldn't be likely to overheat it, but it is good practice not to allow the iron to heat for a longer time, or to a higher temperature than is actually necessary. Overheating, repeatedly done, may injure the heating element, and may discolor the soleplate.

To save time and current, it is very wise to sort your ironing so you will begin with the fabrics that require lower temperatures and move gradually to those that need a very hot iron. Be sure that the sorting is done before you plug in the iron, and remember to shift the thermostat when you change fabrics.

It would seem that the instinct for self preservation would keep people from dropping irons around on their toes, but sadly enough, irons do drop. This may do more than take a notch out of the handle; it may break delicate parts in the heating element or the thermostat or may scratch the soleplate so it will catch on the fabrics you iron.

A sudden fall isn't the only thing that threatens the smooth surface of the iron, though. Ironing over zippers, snaps, or hooks and eyes may scratch it just the same.

To keep the iron clean you can wipe it off with a damp cloth, or even wash it with soap suds and clean it with a very mild scouring powder. Dry it with a clean cloth at once. Never, never put an iron in water—to clean it or to cool it in a hurry. If starch burns on, try getting it off, as some manufacturers recommend, by running the iron over salt sprinkled on a piece of paper. Then wax the soleplate by rubbing the iron across a piece of beeswax or paraffin. You can take off any excess wax by ironing on clean paper.

Plug your iron into a convenience outlet, *not an electric light socket.* The wiring for lighting fixtures is frequently too small for the load put on it by an iron, and may become too hot. The iron will heat slowly, and you will be wasting the electricity you are buying.

When you are through with the ironing, disconnect the cord from the wall outlet and then, if the cord is detachable, from the iron. If you go at it the other way round, and pull the plug from the iron first, you may see a tiny spit of blue flame passing from the prongs to the plug. That is arcing, and repeated often enough, it will cause pitting of those terminal plugs. These would be hard to replace these days because the metals they are made of have gone to war.

Standing guard over your iron becomes something more than a patriotic duty these days. You are pledged to save your useful tools, and you may well be pledged to save your own time and strength for your particular contribution to wining this war, whatever that may be. Since you are, it pays to remember that it is not the pressure, and it is not the weight that gets out the wrinkles. It is the contact of the heat with the dampened garment. Whatever iron you use, let the heat do the job. Don't push.

Light weight irons are just as good—and easier on the user.

Planning the Bathroom

By MRS. JOHN V. McANEAR
Blountsville, Alabama

When we built our home last summer we installed an electric pump in our well, thus giving running water for the farm animals, the kitchen, and the bathroom.

We have a tank of 30 gallons over the steps that lead into the basement. This tank is heated by means of pipes which run through the kitchen range and give us hot water for all our baths.

As our bath room was to be only 6 x 9 ft., we had to be very careful in the planning and arranging of it so it would give every convenience and yet be beautiful.

The room is on the left side of the five-room bungalow between two bed-rooms. Both bed rooms and the dining room open into the little hall which leads into the bath. The stool is in the right-hand corner just behind the door. The tub is directly opposite the door and under the only window in the room. Since the room was one foot longer than the tub, I had a little closet built-in to fit the space at the end of the tub. It has a door on the top of it (just as high as the tub) which is put on with little butterfly hinges. It also has a little 4-inch wooden handle to open it with. It is painted ivory and adds to the appearance of the room as well as to the usefulness. Since my farm folks find this such a handy and convenient place to put their work shoes. Just above this little shoe closet I have a white towel rack.

On the left-hand side as you enter the room, there is a door opening into a closet which has several shelves and a rod for hanging clothes. Between this closet door and the tub there is a space of 30 inches for which I am having a little dressing table made. I will cover it with solid green oil cloth and make the skirt of white dotted voile, to match my window curtain. I have a nice mirror to place over my dressing table.

On the right-hand side of the room between the tub and the stool, is the lavatory, over which is the medicine cabinet. The reason I wanted the lavatory at this place was so the light from the window would come over the left shoulder when anyone wanted to shave. I have another towel rack between the stool and lavatory and also on the sides of lavatory for wash cloths.

Now, last but not least, I want to tell you of another labor-saving device in my bath-room.

Soiled Clothes Chute

On the right-hand side of the room there is a closet in the bed room, where I have a little space ceiled up about two feet high for my soiled (dirty) clothes closet. So just over the right end of the tub, I had a little opening (about 14 x 18 inches) cut into that closet. This door is also hung with little butterfly hinges and looks very neat. So you see

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no more soiled clothes left on the floor when there's nothing to do but put them in the (dirty) clothes closet through this little convenient door. Everyone really admires this handy little door.

I have a green marbleized-effect inlaid linoleum pasted down over felt. This makes a good covering that does not show soil easily and will last for many years.

My walls are beautiful and easy to keep clean. I have the imitation tile wall-board which is 42 inches high around the wall. Mine is enameled in pure white and is lovely with the light green wall paper. Since the tile board is above the baseboard, it gives a deep washable wall—much better than paper which eventually becomes smeared or splattered. All my wood-work is in ivory.

We think this very complete. It is not crowded but looks balanced and well proportioned. It is neat, clean-looking, easy to keep clean and is altogether lovely.

Beans in the well cooker.

BEANS

Long Slow-Baked Beans a Bang-Up Good Substitute for Scarce Meat

A long time ago, as a woman counts the years, I had a friend who married a New Englander. Ted's folks always had baked beans on Saturday night, so Martha baked beans for Saturday night, too. Ted's mother started the beans Thursday afternoon, putting the squat brown bean jar back in the oven of her cook stove, and letting them stay there till supper time Saturday night.

So Martha started her beans Thursday, too. Part of the time there was a good fire going in her stove, and part of the time it was so low the beans just barely kept warm.

All our crowd loved to drop in for supper with Martha on Saturday. There was always a crisp, tangy cabbage salad and hot brown bread to go with the beans, and invariably custard pie to finish with. I think Martha rather welcomed a ravenous group who would dig deep in the bean pot, because that meant, oftener than not, that there were none left for Sunday morning breakfast — and beans for breakfast were part of the tradition she would gladly forego.

The last few years, I've had another friend who bakes beans for parties. Not on Saturday night, but anytime. Everyone liked the way Helene baked beans, and everyone clamored for seconds, and sometimes, if the entire truth were told, for thirds.

Helene baked her beans in the well cooker of her electric range. First she'd wash and drain two pounds of navy beans. She put these in the kettle with an onion in the bottom. Then she added a third of a cup of molasses, and a third of a cup of brown sugar, two teaspoons of salt, a teaspoon of mustard, and six cups of water. She used slices of salt pork, too, about half a pound; then she'd cook those beans from eight to ten hours. Sometimes she'd do the cooking overnight and heat them up for dinner. Sometimes she'd give them a long day's cooking.

Either way made beans that were tops with us.

Good to the Last Bean

My neighbor down the road brought her electric roaster full of baked beans to a pot luck supper we gave not long ago for one of the men in our community who was going to camp. First thing we knew we were scraping the bottom of that roaster, and chasing each bean into a corner in an effort to get every last bit of their succulent goodness.

Her recipe, we found, was much the same as Helene's, multiplied by five in this case, and with those variations in seasoning that each good cook works out for herself. She always starts her beans in a cold roaster, she said, with the temperature set at 275 degrees. She cooks a batch this big overnight, but the family size takes only 4 or 5 hours when she soaks the beans first. For meals without meat, a good hot dish of beans is just the thing. If you can add a dish of carrots, or frozen peas, and a generous salad of raw fruit, with milk for everybody and a constantly replenished plate of whole grain bread, you'll have your family forgetting that they are being fed by a government yard stick, and thinking they are just "eating for fun."

Dried or Dehydrated?

Foods deprived of water are classified as "dried," "evaporated" and "dehydrated." The first term implies the removal of water by any means; the second implies removal with artificial heat. In both evaporation and dehydration, artificial heat is necessary. Evaporation depends on natural draft; dehydration on forced circulation of artificial heat. Dehydration is the most complicated of all drying processes because temperature, humidity and circulation must be controlled.

By JEROME J. HENRY

Shortest Address

Victor Borger, comedian-pianist of the Kraft Music Hall submits this as the shortest address in the world.

Wood
John
Mass

Which plainly reads "John Underwood, Andover, Massachusetts."

Eddie Cantor Scores Again

Eddie Cantor, the pop-eyed comedian who introduced such child stars as Deanna Durbin and Bobby Breen to big time radio, stage and screen, has done it again! This time it is Shirley Dinsdale, a 15-year-old ventriloquist and her doll, Judy Splinters.

Shirley has been described as a great "natural" ventriloquist. She has been practising the art less than a year. Before that she was simply hard at work at her studies in Drew's Private High School in San Francisco, where her mother was formerly an instructor.

Last Spring Lawrence Johnson, a veteran ventriloquist, ordered a new dummy from Shirley's father, a puppet maker. Johnson paid for his dummy by teaching Shirley his art and she proved an apt pupil. She made her debut in a church minstrel show.

Needing a dummy in a hurry, Shirley searched through her father's stock but all he had on hand was a mechanical figure of Mussolini. "Mussolini" was beheaded, and a doll's head and a mop of black hair placed atop the body. The result: Judy Splinters!

Shirley and Judy soon got a radio show of their own on KPO in San Francisco. Naturally, Shirley took Judy down to the Hollywood canteen to meet the soldiers and sailors. It was there that Eddie Cantor saw her, and seven months after her first lesson in ventriloquism, Shirley was signed to a contract on a network radio show.

Daddy's Real "Baby" Is Brat to Hitler

All radio fans know Hanley Stafford as "daddy" to Baby Snooks, but a young man who is vastly unpopular in Hitlerland is the only person with a birthright to that name.

Young Graham Stafford is following the footsteps of his father and grandfather, who fought in the last war.

Now in Hollywood on a furlough from his duties as an RAF flight sergeant-gunner, Graham is the sole survivor of a forced landing on the North Sea after which he floated for five days and nights on a rubber raft before being rescued.

One of his most harrowing experiences occurred after a raid on Germany when he was flying back to England and his bomber be-

Charlie McCarthy, all decked out in his new West Point uniform, objects strongly to the way Don Ameche is appropriating the attention of the lovely songstress, Dale Evans, his feminine favorite on the weekly radio show. Edgar Bergen stands by amused by Charlie's jealousy.

NEW STEWART V-BRACKET SHEARING MACHINE

Simple in design, compact and sturdy in construction, this new Stewart gear is built for long years of service. Two types: —The VB1, for permanent mounting, as illustrated, can be operated from any ¼ hp. electric motor. The VB2 has 3-section jointed shaft for operation from any gasoline engine ½ hp. or more. Can be used from rear of a pick-up truck, the trunk of an automobile, or on a trailer. Both types have the latest Stewart EBR Handpiece, 2 combs and 4 cutters. VB1, $46.95. VB2, $54.95. Slightly higher west of Denver.

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Available with either 2 or 3 section jointed shaft

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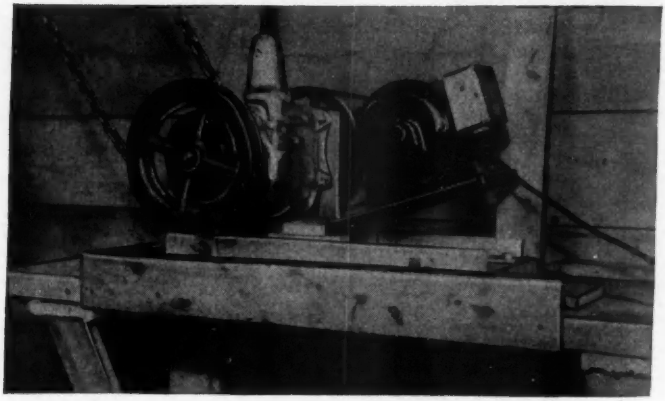
come lost in a heavy fog, with the radio out of commission. After a successful night landing, the boys in the bomber were terrified to find their only landing mark a Dutch windmill. Sure that they were in Holland, they were about to destroy the plane when Graham discovered that the windmill was just an advertising stunt for a gas station and they really were in England after all.



Quarter-Horsepower Motor Hoists Manure

Vermont Farmer Rigs Up Small Motor and Old Automobile Transmission to Do Heavy Lifting Job. In Use Four Years

By **RALPH BUGBEE**

IT takes a lot of elbow grease to raise a full manure carrier bucket weighing about 600 pounds a distance of six feet even with a chain hoist. At least that is what Ralph Purinton thought when he had to clean out his double row 90 foot stable. The hills of Vermont, and especially those around Bristol where Mr. Purinton farms, are invigorating, but not that strength giving, so he called in the agricultural engineer of the Central Vermont Public Service Corporation and asked him what could be done at a reasonable cost.

Due to the construction of the carrier it was out of the question to mount any lifting apparatus on the carrier itself. The carrier basket is of the type that is wheeled through the stable and then hoisted up onto the carrier track by means of a chain hoist. It therefore was necessary to have a stationary power arrangement to which the hoisting chain could be connected. An ordinary automobile transmission was bought for $5.00 and a chain sprocket wheel like the one on the carrier lift was bought and mounted on the drive shaft arbor coming out of the transmission. A V pulley was mounted on the engine side of the transmission shaft and the whole braced into a solid frame and mounted on a shelf out of the way. A ¼ H.P. repulsion induction motor was used for power with a V belt, but a split phase motor would do the job.

The assembly was placed so that the chain sprocket pulley was in line with the pulley on the lifting mechanism and at a distance to permit slipping the lifting chain on and off of the driving pulley easily.

In operation, the load is wheeled under the lifting hoist and attached, the lifting chain is slipped over the drive sprocket, the shift lever thrown into low gear, the motor switched on and up goes the load. When the load is at the proper height the motor is stopped, the chain slipped from the drive pulley and the load pushed to the pit and dumped. On the return trip the reverse procedure is followed with the exception that the shift lever is thrown into reverse. Mr. Purinton says that on most loads second gear can be used and sometimes first. Low will take up anything.

The total cost was about $27.00 including the motor and it has been in operation now for about 4 years.

The Diary of an Advertising Man

June 20. Visited with an old country woman, over seventy, who praised the Lord and blessed His Name. For the first time in her life she has running water in her house. It's just a cold water spigot in her kitchen sink, with another outside for her flowers, but it means no more toting from the old well. Riches.—*From Advertising Age.*

Louisiana and South Carolina have passed laws requiring the *enrichment* of flour and bread, as a measure for improving nutrition of the populations in those states.

Wooden fence posts treated with chromated zinc chloride last three to ten times longer than if untreated.

"There's a mean streak in you, Wilbur. You made Mrs. Storaway unhappy by reminding her that she can't hoard electricity!"

Questions and Answers

Line Extension for Dairy

▶**Question:** *Last March we purchased a farm and applied for electricity. The distance is approximately 1,500 ft. to the service line. We have a dairy farm and milk 19 cows and it is impossible to milk these animals by hand with the labor situation. We produced 208,000 lbs. of milk for 12 months. Is there any possible way to get electricity?*

W. M., Ill.

▶**Answer:** Keep in touch with your County War Board. As we go to press there is talk of relaxing the prohibition of rural line extensions. Length of permitted extension would be based on productive capacity of your farm. War Boards and power companies will know when ruling is changed. It may happen before you receive this issue.

Homemade Battery Charger

▶**Question:** *I have a home-made battery charger. It is to charge a 6-volt storage battery from 110 volt a.c. current. I run the current through a light bulb to reduce the voltage (this is my problem) then through a solution of soda water to act as a rectifier and then through the battery.*

What I would like to know is how many bulbs must I hook in series and of what wattage to get the right voltage reduction so as not to burn up the battery. Perhaps you know of a better set up to charge storage batteries. If so, let me know.

B. G., Iowa

▶**Answer:** I think you must be misinformed about using a solution of soda as a rectifier for alternating current. I have never heard of such a use so could not advise you how to make the set-up.

Two methods are commonly used for charging storage batteries on the farm. One is to use a ¼ or ½ hp motor to drive a small generator such as may be obtained from auto wrecking concerns. Put the ammeter from the automobile instrument board in the circuit and run the generator at a speed to give a charging rate of at about 15 amperes.

The other method of charging batteries is to use a small tungar or tube type rectifier which may be purchased from electric supply houses or mail order concerns.

Electric Heat for Chicken Coop

▶**Question:** *Please send me information about keeping a chicken coop warm in cold weather by electricity.*

J. Z., Wisc.

▶**Answer:** I would not recommend electricity for heating chicken coops or houses unless you have an exceptionally low rate and a well insulated house. For emergency purposes with young chicks in brooder houses you can use a radiant type heater or one of the heaters with a built-in fan of 1,000 watts or 660 watts capacity. This is the same type of heater you would use in your living room or bathroom for providing ing some additional warmth.

Paint for Bath Tub

▶**Question:** *Will you tell me what kind of paint I can use to paint a bath tub on the inside that won't peel off.*

A. W. C., Colo.

▶**Answer:** I am not certain that you can get any kind of paint which will adhere indefinitely to the inside of a bath tub without peeling off. Good aluminum paint should give good results if you can get it, or white lacquer.

In using any kind of paint on the inside of the bath tub it will be absolutely necessary to have the bath tube clean and free from all grease and soap. You should use some solvent to remove the grease and then scrub the tub thoroughly with hot water and soap and rinse it and let it dry before applying the lacquer. Sand the rough places.

To Keep Distillery Slop from Freezing

▶**Question:** *How can I keep distillery slop from freezing in a 1,000-gallon open top tank?*

J. R. B., Ky.

▶**Answer:** I believe the first thing I would do to keep the distillery slop from freezing would be to house in the tank and put some straw or other insulating material around it, if this is possible. That might do the job in your Kentucky climate. If you need more heat to prevent freezing, I would suggest having the cover of the tank fairly close to the top and mounting about four 250-watt heat lamps with reflectors directing the heat down into the tank. You would need no priorities for these lamps. Another method of supplying heat would be to use soil heating cable in lengths of 60 ft. on 110-volt circuits or 120 ft. on 220-volt circuits. Three 60-ft lengths on 110 volts would give you about 1200 watts. This should be sufficient to prevent freezing and the soil heating cable would not overheat the slop in any one spot.

New Gaskets for Refrigerator Doors

▶**Question:** *I have been told it is impossible to buy a new rubber gasket for the Frigidaire. Would like to know.*

F. A. B., Conn.

▶**Answer:** Frigidaire Sales and Service in New York tell me they have rubber gaskets for practically all models of their refrigerators. If your dealer does not have one on hand, he can obtain one from the company by sending in the catalog and serial number of your box with your name and address. Distributors of other makes of refrigerators also have rubber gaskets available.

Where rubber gaskets are not available, there is a substitute material similar to weather stripping which has been used on refrigerators and is also available. This would apply to other makes of refrigerators as well as Frigidaire.

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If you are using a Monarch Range — write for free booklet entitled "How to Care for your Monarch Range"—mentioning the kind of fuel you use.
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MAKE YOUR OWN HOVER for Trumbull Brooderator
It's patriotic, it's practical and highly profitable to build your own brooder, using the tested and proven Trumbull Brooderator as the basic unit. Required materials cost less than $2.00. You can do the work in an hour or so. Guaranteed to do as good a brooding job as any brooder on the market.
Directions for making the brooder are packed with every Brooderator. Write us for complete details.
The TRUMBULL ELECTRIC MFG. CO
1012 Woodford Ave. Plainville, Conn.

Which Milker Is Best?

▶**Question:** *Which make of milking machine is the best.* F. B., Iowa

▶**Answer:** I regret that I cannot tell you which is the best make of milking machine. It is something like trying to tell whose wife is best.

If any one milking machine or tractor was best for everybody then the others would probably soon go off the market. Our advice is always to buy from a dealer who is dependable and who will be on hand should you need repair parts or service. Select the machine on the basis of the number of cows you have to milk, the amount of money you have to spend, the labor required in caring for the machine, the ease with which it can be kept clean and sanitary on your particular farm and the reliability of the company which makes it.

Brooder Operating Costs

▶ **Question:** *I am a dealer in poultry supplies and have a customer who intends using six large electric brooders, but feels they are too expensive to operate. My 500 chick electric brooders are 42 x 72 in. with 1,000 watt heating element and electric driven fan. The customer intends using two or three in each building. The buildings are well insulated. He intends using them all year starting now in December.*

Can you please give me some facts as to their operating cost compared to oil or coal and how many kilowatt-hours a day such an electric brooder uses?

C. S., New York

▶ **Answer:** The power consumption of electric brooders varies considerably with the construction of the brooder with outside temperatures and with the management of the operator. In Mid-Winter New York conditions, I would guess that your 1,000 watt 500 chick brooder under average operation might use 18 kilowatt hours per day or a total of 1¼ to 1½ kilowatt-hours per chick raised, allowing for a brooding period of about seven weeks.

Many farmers operate electric brooders at less than the cost of oil heated brooders. Your customers should understand that an electric brooder does not heat the building so the insulation of the building will not make as much difference as having a very tight and warm floor and a building which is tight enough so there will be no floor drafts.

The other advantages of reliability, ease of operation, better feathering, lack of fire hazard are as important as the matter of cost.

New Publications

(*Publications are obtainable from the addresses given in the description. Some states make small charges for bulletins sent outside the state.*)

• CARE AND MAINTENANCE OF HOUSEHOLD EQUIPMENT. Bul. 153 Virginia Polytechnic Inst., Blacksburg, Va. 27 pp., illus. Brief pointers on the care of motors, water systems, brooders, refrigerators, ranges, washing machines, roasters, cookers and small appliances. Locating trouble; fuses; making cord repairs. Seven pages on cleaning, adusting and "trouble shooting" sewing machines. Good and specific.

• EFFECT OF TEMPERATURE ON HATCHABILITY OF TURKEY EGGS. Bul. 317, N. D. Agric. Exp. Sta., Fargo, N. D. 17 pp. of test results. Found turkey eggs hatch better at 1° lower temp. than hens' eggs. (102°.)

• HANDBOOK ON ELECTRIC REFRIGERATION. 16 pp., illus. Westinghouse Home Econ. Inst., Mansfield, O. Proper refrigeration, effect on bacteria and vitamins, quick frozen foods, and care and use of the refrigerator. Gives proper daily allowances of nutrients; and proper storage to preserve them. Intended for teachers and home economists.

• CARE AND MAINTENANCE OF PUMPS AND WATER SYSTEMS. 27 pp., illus. F. E. Myers & Bro. Co., Ashland, O. A new bulletin on taking care of your own service calls. Takes up all types of farm pumps; applies to any make. How to drain pumps, lubrication, stuffing boxes, air volume control and water logged tanks, pressure switches, motors, diagnosing troubles, ordering repairs. Many cut-away illustrations and specific instructions on what to do.

• MAKING YOUR EQUIPMENT LAST LONGER. The Bureau of Home Economics, USDA, Washington, D. C., has issued a series of folders on care of equipment and making it last longer. The subjects include washing machine, ironing equipment, household rubber, range, and refrigerator.

Cockroaches Killed by Touch of Poison

An insect poison that kills cockroaches if it touches the outside of their bodies, though they can swallow it without harm, is described by Iowa State College. The compound is phenothiazine, which has been under test for some time as a promising fungicide and killer of parasitic worms as well as an insecticide. When it touches the outside of the cockroach's shell, phenothiazine passes through and is apparently converted into another compound, known as a conjugate of thionol, which really does the killing job. Size of the particles of phenothiazine seems to have much to do with its fatal effect. The finer the particles, the smaller the size of the deadly dose needed.—*Science Service.*

A New Use for a Washer

Do you put your washing machine to all the uses possible? Mrs. J. B. Dudley of 723 Baxter Street, Athens, Georgia, thought she did too, until one day last fall.

On that day she was not feeling very well, and since she had planned to have turnip greens for dinner, the prospect of washing enough greens for her family of several members was a task that she relished even less than usual. Then she spied her washing machine, clean and standing idle, and had an inspiration. It was worth trying, anyway! So into the washer went water and turnip greens, the activator was started, and the grit settled to the bottom of the tub. She usually washes her greens eight or ten times, but this process had to be repeated only twice in the machine.

Mrs. Dudley prefaced this "Tale of the Tub" by describing it as a "crazy idea" but it worked for her and she passed it on for what it might be worth to any other owner of a washer being put to only part time use.

MARGARET PERRY,
Home Economist,
Athens, Georgia.

CLASSIFIED ADVERTISING

LABOR-SAVING ELECTRIC SUPPLIES. Time switches. Water heaters. Burglar and temperature alarms, etc. . . . SAVE time, material, and oil—electrify old incubators, homemade brooders, etc. here's a proven Lyon part for the job. Send today for free details. LYON RURAL ELECTRIC CO., Dept. EF, Greensboro, N. Car., or San Diego, Calif.

WRITE FOR FREE CATALOG DESCRIBING Brower's Electric Fan type Floor Brooders. 300 and 500 chick capacities. Only limited supply available—act quick! BROWER MFG. CO., Dept. N-64, Quincy, Ill.

INFORMATION SERVICE

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As a reader of ELECTRICITY ON THE FARM you are entitled to our readers' information service free of cost or obligation. Here is how it works.

If you are seeking information about any particular equipment or application for electricity, first check through the advertisements in this magazine. They are your best guide.

Then if you do not find what you want, just fill out and mail the blank below or write a letter addressed to our Readers' Service Dept. and our Editor will be glad to write you as promptly and as fully as possible. That's all there is to it. What are your questions?

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